

IN THE CLAIMS:

Claims 1-5, 7-15, and 17-29 are pending in this application. Please cancel claims 6 and 16 without prejudice or disclaimer and amend claims 1-5, 7, 11, 14-15, and 17 as follows:

1. (Currently Amended) A heat storage unit comprising:

a heat storage body which stores heat by a state change from solid to liquid;
a heat exchange medium which exchanges heat by directly contacting said heat storage body, has a smaller specific gravity than a specific gravity of said heat storage body, and is separated from said heat storage body;
~~a storage container that houses [[a]] the heat storage body, which stores heat by a state change from solid to liquid, and [[a]] the heat exchange medium, which exchanges heat by directly contacting said heat storage body, has a smaller specific gravity than that of said heat storage body, and is separated from said heat storage body;~~
a supply pipe that passes through at least said heat storage body housed in said storage container and supplies said heat exchange medium into the storage container; and
a discharge pipe that discharges said heat exchange medium housed in said storage container to the outside of said storage container,
wherein said supply pipe crosses a boundary surface between said heat exchange medium and said heat storage body housed in said storage container[[,]] and has a plurality of discharge holes that discharge said supplied heat exchange medium, and at least one of said discharge holes is positioned inside said heat exchange medium,
wherein at least a part of said discharge pipe extends in a horizontal direction,
and
wherein a connection port of said supply pipe is positioned above a connection port of said discharge pipe.
2. (Currently Amended) The heat storage unit according to Claim 1, wherein said supply pipe crosses vertically with respect to said boundary surface.

3. (Currently Amended) The heat storage unit according to Claim 2, wherein
said supply pipe is disposed coaxially around [[the]] a circumference of an area having said discharge holes and has a circulation pipe to allow said heat exchange medium discharged from said discharge holes to go up in [[the]] a vertical direction.
4. (Currently Amended) The heat storage unit according to Claim 1, wherein
~~in the case where at least a part of said supply pipe or at least a part of said first supply pipe extends in [[the]] a horizontal direction, and~~
said discharge holes are provided for an area extending in the horizontal direction such that the holes are open in the vertically downward direction.
5. (Currently Amended) The heat storage unit according to Claim 1, wherein
in said heat storage body, said supply pipe ~~or said first supply pipe~~ has an expanded portion that is in a shape that widens toward [[the]] an end and provided with said discharge holes on [[the]] a bottom surface.
6. (Canceled)
7. (Currently Amended) The heat storage unit according to Claim 1, further comprising:
wave-absorbing plates that are parallelly arranged in parallel with each other along the boundary surface between said heat storage body and said heat exchange medium and arranged vertically ~~with respect~~ to said boundary surface, and prevents agitation on said boundary surface.
8. (Original) The heat storage unit according to Claim 1, wherein
said discharge pipe includes a separation mechanism that separates said heat storage body and said heat exchange medium.
9. (Original) The heat storage unit according to Claim 8, wherein
said separation mechanism has a separator for allowing said heat exchange medium and said heat storage body, which were taken in, to flow horizontally in one

direction and a discharge hole that discharges said heat storage body, which is being precipitated, from said separator, and

 said separator has a shape for guiding said precipitated heat storage body toward said discharge hole.

10. (Original) The heat storage unit according to Claim 1, wherein
 said heat storage body is erythritol.

11. (Currently Amended) A heat storage unit comprising:
a heat storage body which stores heat by a state change from solid to liquid;
a heat exchange medium which exchanges heat by directly contacting said heat storage body, has a smaller specific gravity than a specific gravity of said heat storage body, and is separated from said heat storage body;
 a storage container that houses [[a]] the heat storage body, ~~which stores heat by a state change from solid to liquid~~, and [[a]] the heat exchange medium, ~~which exchanges heat by directly contacting said heat storage body, has having a smaller specific gravity than that a specific gravity of said heat storage body, and is separated from said heat storage body~~;
 a supply pipe that passes through at least said heat storage body housed in said storage container and supplies said heat exchange medium into the storage container; and
 a discharge pipe that discharges said heat exchange medium housed in said storage container to the outside of said storage container, wherein
 said supply pipe includes:
 a first supply pipe having discharge holes that discharge said supplied heat exchange medium into said heat storage body; and
 a second supply pipe that crosses [[the]] a boundary surface between said heat exchange medium and said heat storage body, which are housed in said storage container, and has an outlet that discharges said supplied heat exchange medium into the heat exchange medium,
 wherein at least a part of said discharge pipe extends in a horizontal direction, and

wherein a connection port of said supply pipe is positioned above a connection port of said discharge pipe.

12. (Original) The heat storage unit according to Claim 11, wherein
in said heat storage body, said second supply pipe surrounds at least a part of said first supply pipe including said discharge holes and has a communicating portion that guides said discharge holes to said heat exchange medium.
13. (Original) The heat storage unit according to Claim 11, wherein
a switching valve for switching supply and cutoff of said heat exchange medium depending on the state of said heat storage body is provided severally for said first and second supply pipes.
14. (Currently Amended) The heat storage unit according to Claim 11, wherein
~~in the case where~~ said supply pipe or at least a part of said first supply pipe extends in [[the]] a horizontal direction, and
said discharge holes are provided for an area extending in the horizontal direction such that the holes are open in [[the]] a vertically downward direction.
15. (Currently Amended) The heat storage unit according to Claim 11, wherein
in said heat storage body, said supply pipe or said first supply pipe has an expanded portion that is in a shape that widens toward [[the]] an end and provided with said discharge holes on [[the]] a bottom surface.
16. (Canceled)
17. (Currently Amended) The heat storage unit according to Claim 11, wherein
wave-absorbing plates that are ~~parallelly~~ arranged in parallel with each other along the boundary surface between said heat storage body and said heat exchange medium and arranged vertically ~~with respect~~ to said boundary surface, and prevents agitation on said boundary surface.

18. (Original) The heat storage unit according to Claim 11, wherein
said discharge pipe includes a separation mechanism that separates said heat storage body and said heat exchange medium.
19. (Original) The heat storage unit according to Claim 18, wherein
said separation mechanism has a separator for allowing said heat exchange medium and said heat storage body, which were taken in, to flow horizontally in one direction and a discharge hole that discharges said heat storage body, which is being precipitated, from said separator, and
said separator has a shape for guiding said precipitated heat storage body toward said discharge hole.
20. (Original) The heat storage unit according to Claim 11, wherein said heat storage body is erythritol.
21. (Original) A heat storage unit comprising:
a storage container that houses a heat storage body, which stores heat by a state change from solid to liquid, and a heat exchange medium, which exchanges heat by directly contacting said heat storage body, has a smaller specific gravity than that of said heat storage body, and is separated from said heat storage body;
a supply pipe that passes through at least said heat storage body housed in said storage container and supplies said heat exchange medium into said storage container; and
a discharge pipe that discharges said heat exchange medium housed in said storage container to the outside of said storage container, wherein
said supply pipe includes:
a first supply pipe having an outlet that discharges said supplied heat exchange medium into said heat exchange medium housed in said storage container housed in said storage container; and
a second supply pipe that has at least a part of said first supply pipe inside the pipe and has discharge holes that discharge said supplied heat exchange medium into said heat storage body.

22. (Original) The heat storage unit according to Claim 21, wherein
in the case where said supply pipes are provided parallelly in said heat storage body,
a thermal conduction member for conducting heat of said supply pipes is provided.
23. (Original) The heat storage unit according to Claim 22, wherein
at least a part of said supply pipe is provided on the bottom surface of said storage container.
24. (Original) The heat storage unit according to Claim 21, wherein
said second supply pipe is provided on the bottom surface of said storage container so as to cover said bottom surface.
25. (Original) The heat storage unit according to Claim 21, wherein
a connection port of said supply pipe is positioned above a connection port of said discharge pipe.
26. (Original) The heat storage unit according to Claim 21, comprising:
wave-absorbing plates that are parallelly arranged with each other along the boundary surface between said heat storage body and said heat exchange medium and arranged vertically with respect to said boundary surface, and prevents agitation on said boundary surface.

27. (Original) The heat storage unit according to Claim 21, wherein
said discharge pipe includes a separation mechanism that separates said heat storage body and said heat exchange medium.
28. (Original) The heat storage unit according to Claim 27, wherein
said separation mechanism has a separator for allowing said heat exchange medium and said heat storage body, which were taken in, to flow horizontally in one direction and a discharge hole that discharges said heat storage body, which is being precipitated, from said separator, and
said separator has a shape for guiding said precipitated heat storage body toward said discharge hole.
29. (Original) The heat storage unit according to Claim 21, wherein said heat storage body is erythritol.